

**NOW**  
**ONE DAY DELIVERY**  
ON OVER 90% OF ALL  
LAMBDA 5-YEAR GUARANTEED  
POWER SUPPLY MODELS

 **LAMBDA**  
**power**  
**instruments**

**Lambda's new high precision power supply  
differential voltmeter accessory**  
**THE LS SERIES**  
**A COMPLETELY NEW LAB INSTRUMENT**



# LAMBDA LS series...

**1** a completely new kind of differential voltmeter  
with its own high precision power source

## ONLY THE LAMBDA HIGH PRECISION POWER DIFFERENTIAL VOLTmeter:

- enables you to draw power as you measure your voltage.
- is guaranteed for 5 years, materials and labor.
- has two meters.
- is Multi-Current-Rated for 30°C, 40°C, 50°C, 60°C.
- is priced as low as \$460.



# a completely new laboratory instrument

**2** a metered High Precision Power Supply  
that offers 8 exclusive features

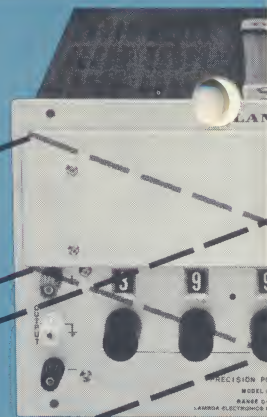
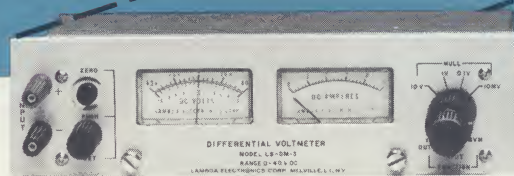
## ONLY THE LS HIGH PRECISION POWER SUPPLY:

- converts to a power differential voltmeter.
- offers twice the power in  $\frac{1}{2}$  rack package.
- has Millimatic™ gang dialing, illuminated digital readout.
- is guaranteed for five years, materials and labor.
- has .0005% plus  $100\mu\text{V}$  regulation.
- has constant current/constant voltage by automatic crossover.
- is priced as low as \$430.
- has  $35\mu\text{V}$  rms ripple.



# How Lambda's unique plug-in accessory concept

## Buy the basic LS Series



With this plug-in accessory it becomes a High Precision Power Differential Voltmeter that obsoletes any instrument now offered for this service.



- **Draw power as you measure voltage**—The first and only differential voltmeter to furnish high stability power output while being used as a voltmeter . . . no need for a separate power supply.
- **0.01% + 1mV accuracy**
- **Illuminated Digital Readout Millimatic™ gang dialing**—5-digital voltage dials with automatic decade switching provides convenient precise adjustment (200μV resolution over entire range).
- **2 meters**—Monitor both voltage and current simultaneously and continuously.
- **Guaranteed for 5 years**—The only 5-year guarantee that includes labor as well as parts. Guarantee applies to operation at full published specifications at end of 5 years.
- **Multi-Current-Rated** for 30°C, 40°C, 50°C, 60°C—Covers temperatures most often encountered in laboratory work.
- **5 Models**—With ranges of 0-10, 0-20, 0-40, 0-120, 0-250VDC—Wide selection of ranges to suit your specific needs.
- **Only 5¼" high**—Convenient half rack size for rack or bench use.
- **Stability 0.001% + 100μV for 8 hours**
- **All-silicon design** for maximum reliability
- **Convection-cooled** for convenience and reliability . . . no blowers or heat sinks.
- **Remote programing** by changes in voltage or resistance for convenience in systems, test equipment and automatic equipment applications.
- **Auto Series/Auto Parallel** with Master-Slave tracking
- **Constant I/Constant V** by automatic crossover
- **Completely protected:** short-circuit proof; continuously adjustable automatic current limiting
- **Overvoltage protection** available as low cost add-on accessory (see page 6).
- **Rubber Feet** provided for bench use.
- **Plus all power supply specifications.** (see page 7).
- **Mount in Rack Adapters**—LRA-1 (\$60.00) or LRA-2 (\$35.00). Rack adapter LRA-1 only is available with chassis slides mounted. Add suffix "CS" to rack adapter model number and \$50 to price.



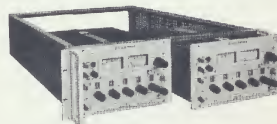
# lets you expand the capability of your laboratory.

## High Precision Power Source.

With this plug-in accessory it becomes  
a Metered High Precision Power Supply that offers  
all these features:



- **0.0005% plus 100  $\mu$ V regulation**—Best of any high stability power supply in this price range.
- **Ripple**—35 $\mu$ V rms; 100 $\mu$ V p=p.
- **0.01% + 1mV accuracy**
- **Twice the power** in a convenient 1/2-rack package
- **2 meters**—Monitor both voltage and current simultaneously and continuously.
- **Guaranteed for 5 years**—The only 5-year guarantee that includes labor as well as parts. Guarantee applies to operation at full published specifications at end of 5 years.
- **Multi-Current-Rated** for 30°C, 40°C, 50°C, 60°C—Covers temperatures most often encountered in laboratory work.
- **5 Models**— With ranges of 0-10, 0-20, 0-40, 0-120, 0-250VDC— Wide selection of ranges to suit your specific needs.
- **Illuminated Digital Readout Millimatic™ gang dialing**—5-digital voltage dials with automatic decade switching provides convenient precise adjustment (200 $\mu$ V resolution over entire range).
- **Only 5 1/4" high**—Convenient half rack size for rack or bench use.
- **Stability 0.001% + 100 $\mu$ V for 8 hours**
- **All-silicon design** for maximum reliability
- **Convection-cooled** for convenience and reliability . . . no blowers or heat sinks.
- **Remote programing** by changes in voltage or resistance for convenience in systems, test equipment and automatic equipment applications.
- **Auto Series/Auto Parallel** with Master-Slave tracking
- **Constant I/Constant V** by automatic crossover
- **Completely protected:** short-circuit proof; continuously adjustable automatic current limiting
- **Overvoltage protection** available as low cost add-on accessory (see page 6).
- **Rubber Feet** provided for bench use.



- **Mount in Rack Adapters**—LRA-1 (\$60.00) or LRA-2 (\$35.00). Rack adapter LRA-1 only is available with chassis slides mounted. Add suffix "CS" to rack adapter model number and \$50 to price.

# Illuminated digital readout Millimatic<sup>(TM)</sup> gang dialing



With Millimatic gang dialing  
one step takes you  
from 29.999 to 30.000



One step takes you back to 29.999



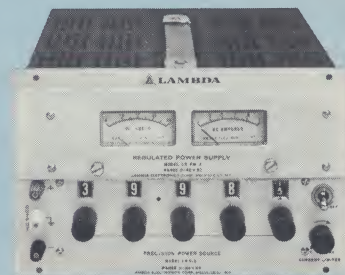
Without Millimatic dialing  
it would take you 74 steps

Millimatic gang dialing is similar to an automobile odometer. Each switch is coupled with those on the left so that you can effect continuous adjustment of all 5 digital voltage dials simply by turning the right-hand knob. All decades to the left adjust simultaneously whenever a zero is passed . . . go from 29.999 to 30.000 in one step, for example . . . back to 29.999 with just one additional step. Each of the 5 decade switches can also be operated independently.



GUARANTEED FOR 5 YEARS

## LS Series High Precision Power Supply Data



Basic Non-Metered Model	Voltage Range	Max. Amps at Ambient of <sup>(1)</sup>				Price <sup>(2)</sup>	Metered Accessory	
		30°C	40°C	50°C	60°C		Model	Price
LS-511	0-10VDC	2.8A	2.5A	2.1A	1.7A	\$375	LS-FM1	\$55
LS-512	0-20VDC	1.8A	1.6A	1.3A	1.1A	375	LS-FM2	55
LS-513	0-40VDC	1.0A	0.9A	0.75A	0.6A	375	LS-FM3	55
LS-515	0-120VDC	0.33A	0.29A	0.25A	0.21A	375	LS-FM5	55
LS-516	0-250VDC	0.1A	0.09A	0.08A	0.07A	380	LS-FM6	55

1 Current rating applies over entire voltage range. Ratings based on 55-65 Hz operation.

2 This price is for non-metered Precision Power Source. Addition of Metered Accessory Plug-In (next two columns) is necessary to have Metered High Precision Power Supply.

### OVERVOLTAGE PROTECTION

For Use With	Model	Adj. Volt. Range	Price
LS-511	LHOV-4	3-24 V	\$35
LS-512	LHOV-4	3-24 V	\$35
LS-513	LHOV-5	3-47 V	\$35

## LS Series High Precision Power Differential Voltmeter Data



Basic Non-Metered Model	Voltage Range	Max. Amps at Ambient of <sup>(1)</sup>				Price <sup>(2)</sup>	Diff. VM Accessory	
		30°C	40°C	50°C	60°C		Model	Price
LS-511	0-10VDC	2.8A	2.5A	2.1A	1.7A	\$375	LS-DM1	\$85
LS-512	0-20VDC	1.8A	1.6A	1.3A	1.1A	375	LS-DM2	85
LS-513	0-40VDC	1.0A	0.9A	0.75A	0.6A	375	LS-DM3	85
LS-515	0-120VDC	0.33A	0.29A	0.25A	0.21A	375	LS-DM5	85
LS-516	0-250VDC	0.1A	0.09A	0.08A	0.07A	380	LS-DM6	85

1 Current rating applies over entire voltage range. Ratings based on 55-65 Hz operation.

2 This price is for Precision Power Source only. Addition of Differential Voltmeter Accessory Plug-In (next two columns) is necessary for unit to function as High Precision Power Differential Voltmeter.

OVERVOLTAGE PROTECTION: See table above.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

**DC OUTPUT:**

<b>Regulated Voltage</b>	
Regulation (line)	0.0005% plus 100 $\mu$ V for line variations from 105-132 VAC.
(load)	0.0005% plus 100 $\mu$ V for load variations from 0 to full load.
<b>Remote Programing</b>	
Resistance	1000 ohms/volt. nominal
Voltage	volt per volt.
<b>Ripple and Noise</b>	35 $\mu$ V RMS, 100 $\mu$ V p to p with either pos. or neg. terminal grounded.
<b>Temp. coef.</b>	0.001% plus 10 $\mu$ V/°C.

**CONSTANT CURRENT:** (Current regulated line or load):**Automatic Crossover:**

<b>Voltage Range</b>	As shown in Tables.
<b>Current Range</b>	Continuously adjustable from 1% to 100% of 30° rating.
<b>Regulation (line or load)</b>	Less than 2.0ma for input variations of 105-132 VAC and from 0 to rated VDC load voltage change.
<b>Ripple and Noise</b>	Less than 500 $\mu$ a with either pos. or neg. terminal grounded.

**OVERLOAD PROTECTION:**

<b>Thermal</b>	Thermostat; automatic reset when over-temperature condition is removed.
<b>Electrical: External Overload Protection</b>	Adjustable automatic electronic current limiting circuit limits the output current to the preset value, thereby providing protection for load as well as power supply. Current limiting settability to 105% of rated current.
<b>Internal Failure Protection</b>	Provided by fuse.

**ACCURACY:** 0.01% plus 1mV at 25°C.

**STABILITY:**

0.001% plus 100 $\mu$ V over any 8-hour period after 30-minute warmup.

**AMBIENT OPERATING TEMPERATURE:**

Continuous duty from 0° to +60°C with load current ratings shown in table.

**STORAGE TEMPERATURE:** -55°C to +85°C.

**INPUT & OUTPUT CONNECTIONS:**

Covered DC output and AC input terminal blocks on rear of chassis.

**CONTROLS:**

(Consult Instruction Manual for specific instructions)

<b>DC output control</b>	5 digit automatic decade transfer system including a continuous vernier.
<b>Current Limiter</b>	Min.-Max. control, front panel.
<b>Remote Sensing</b>	Provision is made for remote sensing to eliminate effect of power output lead resistance on DC regulation, rear panel.
<b>Power</b>	ON-OFF toggle switch, front panel.

**AC INPUT:**

105-132 VAC, 47-440 Hz (Ratings based on 55-65 Hz) 205-265 VAC on request at no extra charge ("V" option)

**PHYSICAL DATA:**

<b>Size, Basic Unit</b>	5 $\frac{1}{8}$ " H x 8 $\frac{3}{8}$ " W x 10 $\frac{1}{8}$ " D.
<b>Weight, Basic Unit</b>	Basic unit with blank panel, 12 lbs net, 15 lbs ship.
<b>Size, Module</b>	2 $\frac{3}{8}$ " H x 8" W x 4 $\frac{1}{8}$ " D.
<b>Weight, Module</b>	1 lb net, 3 lbs ship.
<b>Panel Finish</b>	Brushed aluminum clear anodized panels (standard).

**ACCESSORIES:**

Plug-in metered panel • Differential Voltmeter  
Overvoltage Protection  
Rack Adapters LRA-1 (\$60.00) and LRA-2 (\$35.00)

**POWER SOURCE:** Same as LS Series Power Supply; see data above.

**INPUT RANGE:** 0 to Max. voltage rating of the power source.

**INPUT OVERLOAD PROTECTION:** 500 VDC Max., either polarity.

**METERS:**

- 1) Voltmeter  
Taut-band meter.  
Zero center.
- 2) Ammeter  
Taut-band meter.  
Reads output current of power source.

**VOLTMETER READOUT SELECTOR:**

Concentric with null range selector switch; selects:

- 1) TVM output  
Voltmeter reads output of precision power source.
- 2) TVM input  
Voltmeter reads unknown input.
- 3)  $\Delta$ V  
Voltmeter reads difference between input signal and precision power source.

**NULL RANGES:**

For LS-DM-1, -2, -3 and -5: 10, 1, 0.1, 0.01 VDC.  
For LS-DM-6: 100, 10, 1, 0.1 VDC.

**CONTROLS:** Same as for controls above.

**RESOLUTION:** 200 $\mu$ V for LS-DM-1, -2, -3, and -5; 1mV for LS-DM-6.

**DC ACCURACY:**  $\pm 0.01\%$  of reading + 1mV at null at 25° C.

**TEMP. COEF.** 0.3%/°C resettable with zero adj.

**TRANSISTORIZED VOLTMETER ACCURACY:** 3% of full scale.

**DC INPUT IMPEDANCE:** Infinite at null. 1 Meg  $\Omega$  in TVM.

**AMBIENT OPERATING TEMPERATURE:**

Continuous duty from 0° to +60°C with load current ratings shown in table.

**AC INPUT:** 105-132 VAC, 47-440 Hz (Ratings based on 55-65 Hz) 205-265 VAC on request at no extra charge ("V" option)

**PHYSICAL DATA:** Same as for High Precision Power Supply above.

# LAMBDA LR Series High Performance Power Supplies

New 1/4-rack size  
as well as 1/2-rack size  
provides  
even more versatility  
at low cost.



- 0.0005% plus 100 $\mu$ V regulation.
- 35 $\mu$ V rms ripple.
- AC Input: 105-132 VAC, 47-440 Hz (Ratings based on 55-65 Hz)  
205-265 VAC on request at no extra charge ("V" option).
- 2 meters monitor both voltage and current simultaneously and continuously.
- With Remote Programing  
Accuracy—0.01% plus 1mV  
Stability—0.001% plus 100 $\mu$ V for 8 hours  
Temp. Coeff.—0.001% plus 10 $\mu$ V/ $^{\circ}$ C
- Guaranteed for 5 years. The only 5-year guarantee that includes labor as well as parts. Guarantee applies to operation at full published specifications at end of 5 years.
- Multi-Current-Rated.
- Only 5 1/4" high. Convenient 1/4 and 1/2 rack sizes for rack or bench use.
- All-silicon design for maximum reliability.
- Convection cooled for convenience and reliability . . . no blowers or heat sinks
- Remote programming by changes in voltage or resistance for convenience in systems, test equipment and automatic equipment applications.
- Auto Series/Auto Parallel with Master-Slave tracking
- Constant I/Constant V by automatic cross-over.
- Completely protected: short-circuit proof; continuously adjustable automatic current limiting.
- Overvoltage protection available as low cost add-on accessory.

## Four 1/4-rack models

Model	Voltage Range	MAX. AMPS AT AMBIENT OF <sup>1</sup>				Price <sup>2</sup>
		30 $^{\circ}$ C	40 $^{\circ}$ C	50 $^{\circ}$ C	60 $^{\circ}$ C	
LR-602-FM	0-20 VDC	1.1	.95	.80	.64	\$265
LR-603-FM	0-40 VDC	.60	.50	.42	.33	265
LR-605-FM	0-120 VDC	.23	.20	.17	.14	295
LR-606-FM	0-250 VDC	80ma	72ma	65ma	60ma	310

## Four 1/2-rack models

Model	Voltage Range	MAX. AMPS AT AMBIENT OF <sup>1</sup>				Price <sup>2</sup>
		30 $^{\circ}$ C	40 $^{\circ}$ C	50 $^{\circ}$ C	60 $^{\circ}$ C	
LR-612-FM	0-20 VDC	1.8A	1.6A	1.3A	1.1A	\$305
LR-613-FM	0-40 VDC	1.0A	0.9A	0.75A	0.6A	305
LR-615-FM	0-120 VDC	0.33A	0.29A	0.25A	0.21A	320
LR-616-FM	0-250 VDC	100ma	90ma	80ma	70ma	340

<sup>1</sup> Current rating applies over entire voltage range.

Ratings based on 55-65 Hz operation.

<sup>2</sup> Prices are for metered models. LR Series models are not available without meters.

Prices F.O.B. factory, Melville, N. Y. All specifications and prices subject to change without notice.

## Overvoltage Protection

For Use With	Model	Adj. Volt. Range	Price
LR-602-FM, LR-612-FM	LH-OV-4	3-24 V	\$35
LR-603-FM, LR-613-FM	LH-OV-5	3-47 V	35



LPD Dual Output Model

Size 5 $\frac{3}{16}$ " x 8 $\frac{3}{8}$ " x 10 $\frac{3}{8}$ "

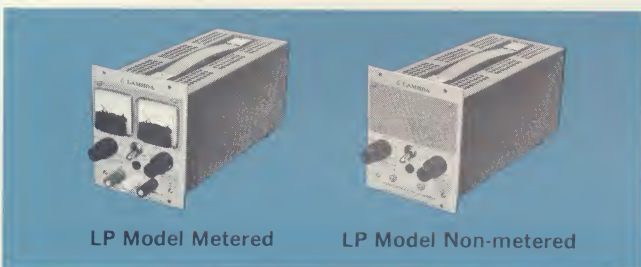
	Voltage Range Per output/ Outputs in series	I MAX AMPS AT AMBIENT OF: (1) Per output/Outputs in parallel				Price(2)
Model(2)	VDC	30°C	40°C	50°C	60°C	
*LPD-421-FM	0±20/0-40	1.7A/3.4A	1.5A/3.0A	1.3A/2.6A	0.9A/1.8A	\$325
*LPD-422-FM	0±40/0-80	1.0A/2.0A	0.85A/1.7A	0.7A/1.4A	0.55A/1.1A	260
*LPD-423-FM	0±60/0-120	0.7A/1.4A	0.6A/1.2A	0.5A/1.0A	0.4A/0.8A	325
LPD-424-FM	0±120/0-240	0.38A/0.76A	0.32A/0.64A	0.26A/0.52A	0.20A/0.40A	325
LPD-425-FM	0±250/0-500	0.13A/0.26A	0.12A/0.24A	0.11A/0.22A	0.10A/0.20A	350

#### LPD NOTES

\* Overvoltage Protection available as an accessory. Each output requires separate OV accessory—add \$35.00 for each output.

<sup>1</sup> Current rating applies over entire voltage range. Ratings based on 57-63 Hz operation.

<sup>2</sup> Prices are for metered models. LPD Series models are not available without meters.



LP Model Metered

LP Model Non-metered

Size 5 $\frac{3}{16}$ " x 4 $\frac{3}{16}$ " 10"

Model	Voltage Range	CURRENT RANGE AT AMBIENT OF <sup>1</sup> :				Price <sup>2</sup> U.S. and Canada
		30°C	40°C	50°C	60°C	
LP-410	0-10 VDC*	0-2A	0-1.8A	0-1.6A	0-1.4A	\$129
LP-411	0-20 VDC*	0-1.2A	0-1.1A	0-1.0A	0-0.8A	119
LP-412	0-40 VDC*	0-0.70A	0-0.65A	0-0.60A	0-0.50A	114
LP-413	0-60 VDC*	0-0.45A	0-0.41A	0-0.37A	0-0.33A	129
LP-414	0-120 VDC	0-0.20A	0-0.18A	0-0.16A	0-0.12A	149
LP-415	0-250 VDC	0-80mA	0-72mA	0-65mA	0-60mA	164

#### LP NOTES

\* Overvoltage Protection available as an accessory—\$35.00 each.

<sup>1</sup> Current rating applies over entire voltage range.

<sup>2</sup> Prices are for non-metered models. For metered models, add suffix (-FM) and add \$10.00 to price.

You can buy overvoltage protection as an accessory.



For use with	Model	Adj. Volt Range	Price*
LP-410; (0-10VDC)	LH-OV-4	3-24V	\$35
LP-411; LPD-421-FM (0-20VDC)	LH-OV-4	3-24V	35
LP-412; LPD-422-FM (0-40VDC)	LH-OV-5	3-47V	35
LP-413; LPD-423-FM (0-60VDC)	LH-OV-6	3-70V	35

\*Price is for a single overvoltage accessory. LPD Series models require one LHOV for each output.

## LP and LPD Series Data

### DC OUTPUT:

#### Regulated Voltage

Regulation  
(line or load) . . . 0.01% + 1mV.

Current Range . . . As shown in table.

#### Remote Programming

Resistance . . . 200 ohms/volt.

Voltage . . . Volt per volt.

Ripple and noise . . . 500  $\mu$ V RMS, 1.5mV p to p (either + or - terminal grounded). LP-415 and LP-425-FM models only—1mV RMS, 3mV, p-p

Temperature coefficient . . . 0.015% + 0.5mV/°C.

### CONSTANT CURRENT: (Current regulated line and load)

#### Automatic Crossover

Voltage Range . . . As shown in table.

Current Range . . . Min: 5mA or 1% whichever is greater.  
Max: as shown in table.

Regulation  
(line or load) . . . Less than 0.2% or 5mA.

### AC INPUT

105-132 VAC; 45-440 Hz.

### OVERLOAD PROTECTION:

Thermal . . . . . Thermostat, automatic reset.

#### Electrical:

##### External Overload

Protection . . . . . Adjustable, automatic electronic current limiting, settable to 105% of rated current.

##### Internal Failure

Protection . . . . . Provided by fuse.

### AMBIENT OPERATING

#### TEMPERATURE

Continuous duty from 0° to +60°C.

#### STORAGE

#### TEMPERATURE

—55°C to +85°C.

### INPUT & OUTPUT

#### CONNECTIONS:

Covered terminal block on rear of chassis; five-way binding posts on front panel. On LPD Models one set of five-way binding posts is provided for each output.

### METERS:

Voltmeter and ammeter. For LPD Models a voltmeter and ammeter is provided for each separate output.

### CONTROLS:

(Consult Instruction Manual for specific instructions)

#### DC output

controls . . . . . Coarse and fine voltage adjust and coarse and fine current adjust on front panel of all models. On LPD Models these controls are provided for each output.

Remote Sensing . . . Provision is made for remote sensing to eliminate effect of power output lead resistance on DC regulation.

Power . . . . . Switch, front panel.

### PHYSICAL DATA:

Size . . . . . LP: 5 $\frac{3}{16}$ " x 4 $\frac{3}{16}$ " x 10".  
LPD: 5 $\frac{3}{16}$ " x 8 $\frac{3}{8}$ " x 10 $\frac{3}{8}$ ".

Weight . . . . . LP: 7 lbs. net; 10 lbs. ship.

LPD: 13 lbs. net; 16 lbs. ship.

Panel Finish . . . . . Brushed aluminum clear anodized panels with grey inlay (standard).

## Accessories



### Blank Front Panels

Model LBP-10 (¼ rack size)

Price \$5.00

Model LBP-20 (½ rack size)

Price \$10.00

### Rack Adapter LRA-1

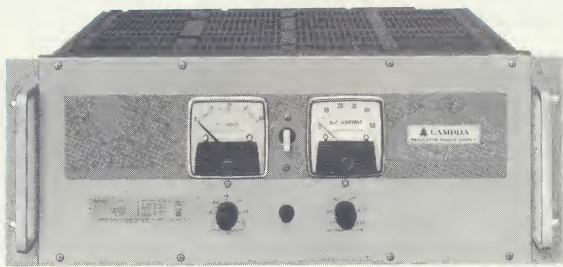
5¼" Height x 16½" Depth  
(For use with chassis slides)  
Price \$60.00

### Rack Adapter LRA-2

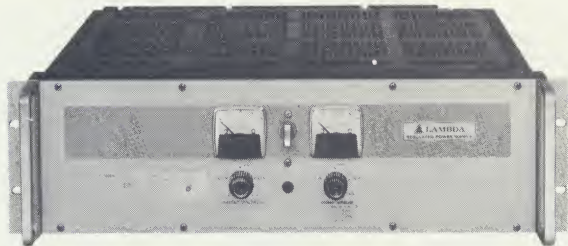
5¼" Height  
Price \$35.00

CHASSIS SLIDES. To order LRA-1 with chassis slides order LRA-1 CS, and add \$50.00 to price

# Lambda LK-LH series offer highest current, smallest packages, lowest cost. 22 models - rack or bench use



7" metered full-rack



5 1/4" metered full-rack

3 full-rack models - Size 7" x 19" x 18 1/2"

Model <sup>2</sup>	ADJ. VOLT. RANGE VDC	CURRENT RANGE AT AMBIENT OF: <sup>1</sup>				Price <sup>2</sup>
		40°C	50°C	60°C	71°C	
LK-360 FM	0-20	0-66A	0-59A	0-50A	0-40A	\$995
LK-361 FM	0-36	0-48A	0-43A	0-36A	0-30A	950
LK-362 FM	0-60	0-25A	0-24A	0-22A	0-19A	995

3 full-rack models - Size 5 3/16" x 19" x 16 1/2"

Model <sup>2</sup>	ADJ. VOLT. RANGE VDC	CURRENT RANGE AT AMBIENT OF: <sup>1</sup>				Price <sup>2</sup>
		40°C	50°C	60°C	71°C	
LK-350	0-20	0-35A	0-31A	0-26A	0-20A	\$675
LK-351	0-36	0-25A	0-23A	0-20A	0-15A	640
LK-352	0-60	0-15A	0-14A	0-12.5A	0-10A	650

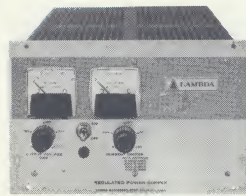
6 half-rack models - Size 5 3/16" x 8 3/8" x 16 1/2"

Model <sup>2</sup>	ADJ. VOLT. RANGE VDC	CURRENT RANGE AT AMBIENT OF: <sup>1</sup>				Price <sup>2</sup>
		40°C	50°C	60°C	71°C	
LK-340 A	0-20	0- 8.0A	0- 7.0A	0- 6.1A	0-4.9A	\$330
LK-341 A	0-20	0-13.5A	0-11.0A	0-10.0A	0-7.7A	385
LK-342 A	0-36	0- 5.2A	0- 5.0A	0- 4.5A	0-3.7A	335
LK-343 A	0-36	0- 9.0A	0- 8.5A	0- 7.6A	0-6.1A	395
LK-344 A	0-60	0- 4.0A	0- 3.5A	0- 3.0A	0-2.5A	340
LK-345 A	0-60	0- 6.0A	0- 5.2A	0- 4.5A	0-4.0A	395

## ACCESSORY OVERVOLTAGE PROTECTION

For Use With	Adj. Volt Range	Price
LK-340A, 341A	3-24 VDC	\$35
LK-342A, 343A	3-47 VDC	35
LK-344A, 345A	3-70 VDC	35
LK-350-352	Overvoltage Protection up to 70 VDC as a built-in option for full-rack models. To order, add suffix (-OV) and add \$90.00 to price of models LK-350-352; add \$120.00 for models LK-360 FM-362 FM.	
LK-360 FM-362 FM		

1/2 RACK metered and non-metered



LH-125 A-FM



LH-125 A

SIZE 5 3/16" x 8 3/8" x 15 1/2"

PATENTS PENDING

Model <sup>2</sup>	ADJ. VOLT. RANGE VDC	CURRENT RANGE AT AMBIENT OF: <sup>1</sup>				Price <sup>2</sup>
		30°C	50°C	60°C	71°C	
LH-119A	0-10	0-9.0A	0-8.0A	0-6.9A	0-5.8A	\$289
LH-122A	0-20	0-5.7A	0-4.7A	0-4.0A	0-3.3A	260
LH-125A	0-40	0-3.0A	0-2.7A	0-2.3A	0-1.9A	269
LH-128A	0-60	0-2.4A	0-2.1A	0-1.8A	0-1.5A	315
LH-131	0-120	0-1.2A	0-0.9A	0-0.8A	0-0.6A	320

1/4 RACK metered and non-metered



LH-124 A-FM



LH-124 A

SIZE: 5 3/16" x 4 3/8" x 15 1/2"

PATENTS PENDING

Model <sup>2</sup>	ADJ. VOLT. RANGE VDC	CURRENT RANGE AT AMBIENT OF: <sup>1</sup>				Price <sup>2</sup>
		30°C	50°C	60°C	71°C	
LH-118A	0-10	0-4.0A	0-3.5A	0-2.9A	0-2.3A	\$180
LH-121A	0-20	0-2.4A	0-2.2A	0-1.8A	0-1.5A	170
LH-124A	0-40	0-1.3A	0-1.1A	0-0.9A	0-0.7A	170
LH-127A	0-60	0-0.9A	0-0.7A	0-0.6A	0-0.5A	185
LH-130	0-120	0-0.50A	0-0.40A	0-0.35A	0-0.25A	240

## ACCESSORY OVERVOLTAGE PROTECTION

For Use With	Model	Adj. Volt. Range	Price
LH-118A-122A	LH-OV-4	3-24 VDC	\$35
LH-124A-125A	LH-OV-5	3-47 VDC	35
LH-127A-128A	LH-OV-6	3-70 VDC	35

## NOTES:

- Current rating applies over entire voltage range.
- Prices are for non-metered models (except for models LK360FM, LK361FM, and LK362FM which are metered models not available without meters). For metered models, add suffix (FM) and add \$30.00 to price.
- Overvoltage Protection up to 70 VDC is available as a bolt-on accessory for models with suffix (-A). To order, see chart, next page. For full-rack models, overvoltage protection up to 70 VDC is available as a built-in option. To order add suffix (OV) and add \$90.00 to price of models LK350-352; add \$120.00 for models LK360FM-362FM.
- Chassis Slides for full rack models: Add suffix (CS) to model number and add \$60.00 to the price, except for models LK360FM-LK362FM, for which add \$100.00.

# meet your laboratory and systems needs with these all silicon, convection-cooled power supplies

## Features and Data

- **All Silicon**
- **Convection Cooled**—no blowers, no external heat sinks
- **Overvoltage Protection**  
Available for all models
- **Remotely Programmable**
- **Remote Sensing**
- **Temp. Coef.** .015%/°C + .5mV/°C
- **Transformer**—designed to MIL-T-27 Grade 6
- **Completely Protected**—Short circuit proof—Continuously adjustable automatic current limiting
- **Constant I./Constant V.** by automatic crossover
- **Meet Mil. Environment Specs.**  
Vibration: MIL-T-4807A  
Shock: MIL-E-4970A Proc. 1 & 2  
Humidity: MIL-STD-810 Meth. 507  
Temp. Shock: MIL-E-5272C (ASG) Proc. 1  
Altitude: MIL-E-4970A (ASG) Proc. 1  
Marking: MIL-STD-130  
Quality: MIL-Q-9858
- **Series/Parallel Operation**
- **No Voltage Spikes or Overshoot** on "turn on", "turn off" or power failure

- **Wide Input Voltage and Frequency Range**—  
Models LK 360 FM, LK 361-FM, 362 FM—200-265 VAC, 47-63 Hz.  
Other LK models—105-132 VAC, 47-63 Hz.  
LH models—105-135 VAC, 45-480 Hz.
- **LH models meet RFI Spec.**—Mil-I-16910
- **AC Input Option**—For operation at 205-265 VAC, add suffix "—V" to model numbers.  
No change in price.
- **Fungus Proofing Option**—Add suffix "R" to model number and add \$20.00 to price

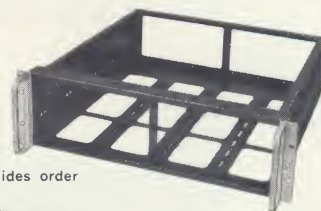
## Accessories

**Rack Adapter LRA-1** Price \$60.00  
5¼" Height x 16½" Depth

CHASSIS SLIDES: To order LRA-1 with chassis slides order LRA-1-CS, and add \$50.00 to price.

**Rack Adapter LRA-2**  
5¼" Height Price \$35.00

**Blank Front Panels**  
Model LBP-10 (¼ rack size) Price \$5.00  
Model LBP-20 (½ rack size) Price \$10.00



### Regulation—

.015% or 1 MV (Line or Load)

### Ripple—

LK Models—500  $\mu$ V RMS

LH Models—250  $\mu$ V RMS, 1 MV P-P

Computer grade  
hermetically sealed 10-year  
life electrolytic  
capacitors

MIL-R-26 type  
wire wound resistors  
and MIL-R-22684  
type film resistors  
mounted on circuit  
boards behind  
front panels

All-silicon,  
hermetically sealed,  
internally mounted  
semiconductors

Convection-cooled heat-sink fins

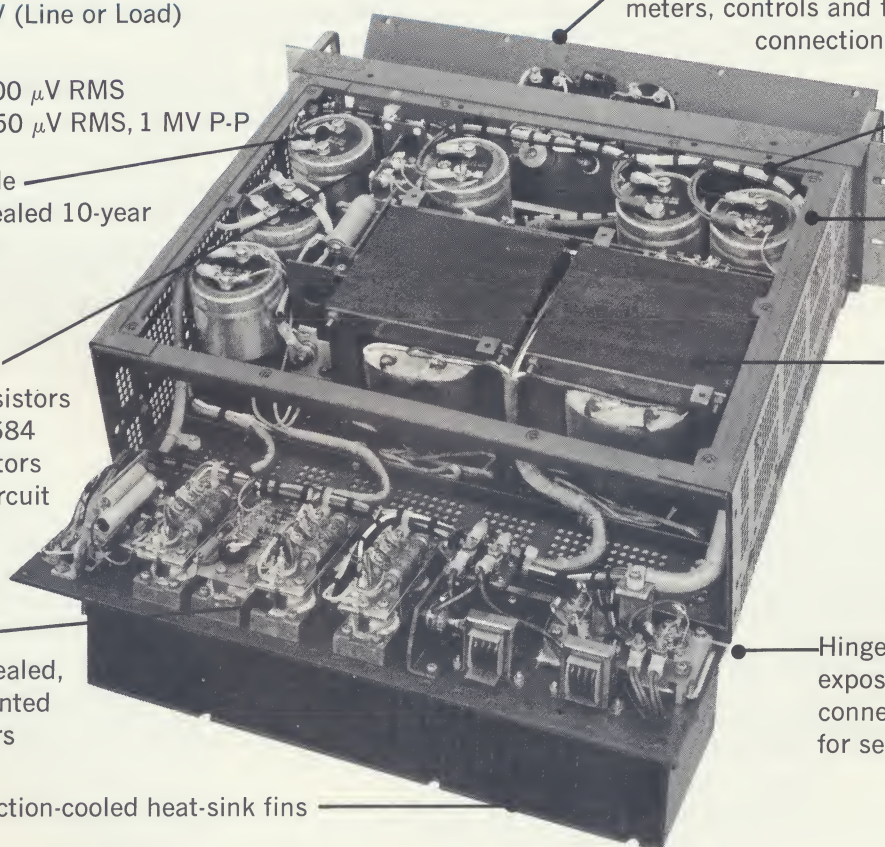
Drop-down front panel exposes  
meters, controls and front electrical  
connections for servicing

MIL—  
W-16878 wire

Top  
completely  
removable

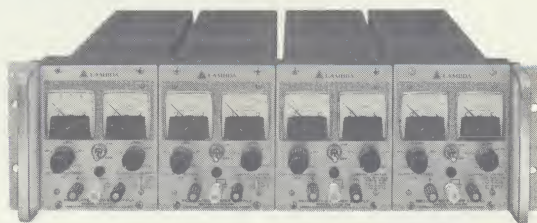
MIL-T-27  
Grade 6  
transformers

Hinged back  
exposes all rear  
connections  
for servicing

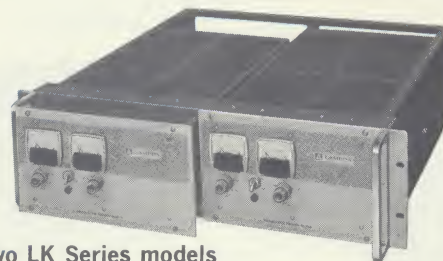


# Lambda LK-LH Series

## FOR RACK USE

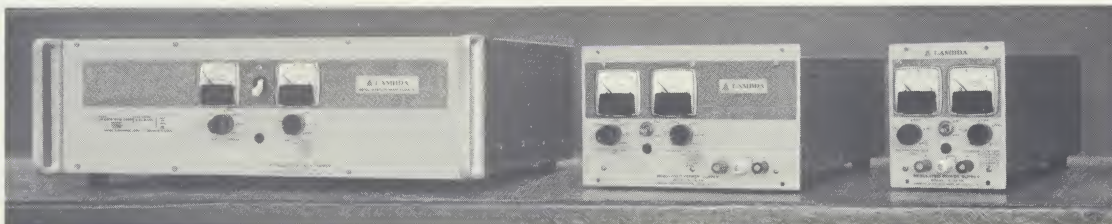


4 DC outputs in a single rack



Two LK Series models  
mounted in LRA-1 Rack Adapter

## FOR BENCH USE



Rubber feet provided for bench use (on full rack models the rack mounting flanges are removable)

### LK-LH SERIES DATA

#### DC OUTPUT

##### Regulated Voltage.

Regulation.....0.015% or 1mV (whichever is greater) for line variations from 105-132 VAC (LK Models) or from 105-135 VAC (LH Models) or load variations from 0 to full load.

##### Remote Programming

Resistance.....200 ohms/volt.

Voltage.....Volt per volt.

Ripple and Noise.....500 $\mu$ V RMS; with either pos. or neg. terminal grounded, LK Models.  
250 $\mu$ V RMS; 1mV p. to p. with either pos. or neg. terminal grounded, LH Models.

Temp. coef.....0.015% per °C.  $\pm$ 5 mV/°C.

#### CONSTANT CURRENT: (Current regulated line and load):

##### Automatic Crossover.

Voltage Range.....As shown in tables.

Current Range.....Minimum (LK Models)—5% of 40° Rating.  
Minimum (LH Models)—20% of 30° Rating.  
Maximum—As shown in tables.

##### Regulation (line or load)

LK Models.....Less than 10mA or .1% whichever is greater for Input Variations of 105-132 VAC and from 0 to rated VDC load voltage change.

LH Models.....Less than 15mA for Input Variations of 105-135 VAC and from 0 to rated VDC load voltage change.

Ripple and Noise.....Less than 1mA RMS either pos. or neg. (LH only) terminal grounded.

#### CONSTANT CURRENT: (Current regulated line and load):

##### High Precision: Barrier Strip Reconnection. LH Models only.

Voltage Range.....As shown in tables.

Current Range.....5% to 100% of Current Ratings at any ambient temperature as shown in table.

Regulation.....Less than .05% or 1mA whichever is greater for Input Variations of 105-135 VAC and from 0 to rated VDC load voltage change.

Ripple and Noise.....Less than 1mA RMS either pos. or neg. terminal grounded.

#### AC INPUT: LH Models...105-135 VAC: 45-480 CPS.

LH-118A 155 watts	LH-122A 300 watts <sup>(1)</sup>	LH-127A 115 watts <sup>(1)</sup>
LH-119A 325 watts	LH-124A 120 watts <sup>(1)</sup>	LH-128A 250 watts <sup>(1)</sup>
LH-121A 135 watts	LH-125A, 131 275 watts <sup>(1)</sup>	LH-130 145 watts <sup>(1)</sup>

(1) With output loaded to full 30°C rating and maximum input voltage.  
LK Models.....105-132 VAC: 57-63 cps with derating for 50 cps operation (205-265 VAC, LK 7" only; internal reconnection provided for 188-238 VAC.)

#### AMBIENT OPERATING TEMPERATURE:

LK Models.....Continuous duty from 0° to +71°C with load current ratings shown in tables.

LH Models.....Continuous duty from -20° to +71°C with load current ratings shown in tables.

#### STORAGE TEMPERATURE: -55°C to +85°C.

#### OVERLOAD PROTECTION:

Thermal.....Thermostat; automatic reset when over-temp. condition is removed.

##### Electrical:

##### External Overload

Protection.....Adjustable, automatic electronic current limiting circuit limits the output current to the present value, thereby providing protection for load as well as power supply. Current limiting settability to 105% of rated current.

##### Internal Failure

Protection.....Provided by fuse.

#### INPUT & OUTPUT CONNECTIONS:

Terminal block on rear of chassis; five-way binding posts on front panel of LH models with suffix (FM) only.

#### METERS:

Voltmeter and ammeter on suffix (FM) models.

#### CONTROLS:

(Consult Instruction Manual for specific instructions)

##### DC output

controls.....LK: Coarse and fine voltage adjust and coarse and fine current adjust on front panel.

LH: Coarse and fine voltage adjust, single current adjust, on front panel.

Remote Sensing...Provision is made for remote sensing to eliminate effect of power output lead resistance on DC regulation.

Power.....Switch, front panel except for chassis mounted models with suffix (S).

#### PHYSICAL DATA:

Weight.....LH 118A 121A 124A 127A 130—14 lbs. net, 18 lbs. ship.  
LH 119A 122A 125A 128A 131—25 lbs. net, 30 lbs. ship.  
LK 340A thru LK 345A 36 lbs. net, 41 lbs. ship.  
LK 350 thru LK 352—95 lbs. net, 125 lbs. ship.  
LK 360 FM thru LK 362 FM—135 lbs. net, 170 lbs. ship.

Panel Finish.....Brushed aluminum clear anodized panels with grey inlay (standard).

# LAMBDA offers the only 5-year guarantee that includes labor now in effect for 15 years



Lambda's 5-Year Guarantee has proven itself three times over. It has covered every Lambda Power Supply sold since 1953. It is another proof of Lambda's high caliber engineering, product design, quality control and production techniques which result in exceptional reliability.



## Performance To Published Specifications

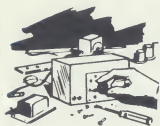
The Lambda 5-Year Guarantee covers the operation of the power supply for five years to published specifications. If, at any time during the five-year period, the power supply does not meet the published specification, it can be returned to the factory for calibration.

## Transferable If You Sell Unit

If the power supply is sold to a manufacturer who is using it in a system, which he is reselling, the complete guarantee is transferable—as long as the Lambda Power Supply is sold as original equipment.

## All Lambda Modifications

The Five-Year Guarantee covers all Lambda Power Supplies, including power supplies which have been modified by Lambda to fit customer's specific requirements.



## Labor and Materials

The Lambda Five-Year Guarantee covers labor and all materials (except for fuses) when returned to the factory. It does include all semi-conductor components.



## Components Free of Charge, If You Repair

If the customer chooses to perform the maintenance, Lambda will supply all replacements for defective components without cost.



## general information

**PRICES** (U.S. and Canada) F.O.B. Factory, Melville, N.Y. effective July 15, 1968. All specifications and prices subject to change without notice.

**SOURCE INSPECTION** 2% EXTRA (\$25.00 minimum) per shipment for standard in-plant inspection procedures. For shipments requiring DD 250 forms, add \$10.00 for each DD 250.

**TERMS** Net 30 days.

**TAXES** All applicable taxes, federal, state and local, are extra.

**QUOTATIONS** All written quotations will be honored for 30 days from the date on which they are made.

### A NOTE ABOUT ADDING SUFFIXES

Suffixes can be added to the basic model number in any order. Just be certain you add the correct suffix for each option you require, separated by a dash, and adjust the price accordingly.

For example a typical LM "F" package model could be written as follows: **LM-F-3-OV-M-R**. Such a number would include:

	Price
LM-F-3 Power Supply .....	\$450
Built-in Overvoltage Protection .....	90
Metered Model .....	30
Fungus Proofing Option .....	15
<b>Total Price .....</b>	<b>\$585</b>

An order for an A Package LM-251 with high performance, AC input and fungus proofing options (Total price \$94.00) would be written as follows: **LM-251-Y-V-R**.

A metered LK-351, with over-voltage protection, would be written as **LK-351-FM-OV**, and the price would be

LK-351 .....	\$640
Metered Model .....	30
Overvoltage Protection Accessory .....	90
<b>Total Price .....</b>	<b>\$760</b>

**TESTING** Every Lambda power supply is electrically tested to insure conformance with published specifications. There is a large safety margin between published maximum specifications and factory test limits. This tolerance is incorporated in the specifications to allow for normal industrial component deviations.

**Current Range:** The current ranges given apply to the entire DC output voltage range, and over entire AC input voltage range, no "de-rating" is necessary.

**Polarity:** Either positive or negative terminal may be grounded.

**RATINGS** All components used are of the highest quality and are operated well within manufacturers' ratings. Ample safety factors are provided in the design to insure the long life, and the dependable, trouble-free operation so desirable in industrial and laboratory applications.

**SHIPMENT** Express shipment in our experience has provided the fastest and safest delivery of power supplies. Unless you specifically request otherwise, your order will be forwarded in this manner. Urgent needs can be shipped by air express or air freight in accordance with your instructions.

**DELIVERY** Under normal conditions, we ship from stock. If circumstances do not permit immediate delivery on a particular model, you will be notified at once and a firm shipping date will be given you. Urgent requirements often can be handled on an expedited basis. Your mail, telephone or telegraph order or inquiry will bring you a same-day reply. Contact your nearest LAMBDA sales office (see back cover).

**SHIPMENT TO FACTORY** Please communicate with us before shipping power supply equipment so that we can arrange with you to keep your "downtime" to a minimum.

**REPAIR PARTS** These are always in stock for immediate shipment for repair purposes. When ordering a repair part, please give the number on the component itself. Also state the model number, serial number, and if possible, date of original purchase of power supply.

U.S. MAIL POSTAGE GUARANTEED

BULK RATE  
U.S. POSTAGE  
PAID  
PERMIT NO. 5434

T NELSON SYSTEMS CONSLT  
BOX 1546 H  
POUGHKEEPSIE N Y 12603

NEW YORK, N. Y.

## LAMBDA—STAFFED SALES AND SERVICE OFFICES

### How to Order

All information necessary to order a power supply is given on each individual page. Send your order directly to your nearest Lambda sales office or call for more specific information. In U.S., orders may be mailed or telephoned directly to the main office in New York.

#### MID-EASTERN DISTRICT

**Melville, New York** 11746, 515 Broad Hollow Road  
Tel. 516-694-4200 TWX: 510-224-6484

#### NEW ENGLAND DISTRICT

**Braintree, Mass.** 02184, 182 Forbes Road, Suite 4  
Tel. 617-848-1610 TWX: 710-348-1161  
**Rochester, New York**, Tel. 716 454-6770

#### SOUTHEAST REGION

**Rockville, Maryland**, 20852, 1075R Rockville Pike  
Tel. 301-424-2010  
**Norristown, Pennsylvania**, Tel. 215-272-7101  
**Orlando, Florida**, Tel. 305-644-9012

#### MID-WESTERN REGION

**Schiller Park, (Chicago) Ill.** 60176, 4849 No. Scott St. Suite 309  
Tel. 312-671-0182/83 TWX: 910-227-0067  
**Minneapolis, Minnesota**, Tel. 612-332-6714  
**Indianapolis, Indiana**, Tel. 317-631-9557

#### SOUTHWEST REGION

**Richardson, Texas** 75080, 777 So. Central Expwy.  
Central Exchange Building, Suite 1B  
Tel. 214-231-7121 TWX: 910-867-4726

**Houston, Texas**, Tel. 713-464-6554

#### FAR-WESTERN REGION

**North Hollywood, Calif.** 91605, 13425 Wyandotte St.  
Tel. 213-877-0041 TWX: 910-499-2651

**Scottsdale, Arizona**, Tel. 602-945-1416

#### NORTHWEST DISTRICT

**Los Altos, California** 94022, P. O. Box 310  
Tel. 415-941-3803 TWX: 910-370-7964

## INTERNATIONAL

Veeco Instruments Inc., Import-Export Department  
Terminal Drive, Plainview, N.Y. 11803 Tel: 516-681-8300, Cable: Veecovac, Plainview, N.Y.

#### CANADA

Radionics Limited, 195 Graveline Street  
Montreal 9, Quebec  
Tel: 514-631-4568 TWX 610-422-3070  
Radionics Limited, 505 Eglinton Ave. West  
Toronto 12, Ontario Tel. 416-483-7191  
Radionics Limited, 376 Churchill Avenue  
Ottawa 3, Ontario Tel. 613-728-4624  
Radionics Limited, 2182 West 12th Ave.  
Vancouver 9, British Columbia Tel. 604-732-7317  
Radionics, Ltd., 3062 Blvd. Quatre-Bourgeois  
Quebec 10, Quebec Tel. A/C 418-651-5845

#### ENGLAND

Lambda Electronics, 21 Aston Road, Waterlooville  
Portsmouth, Hants, Eng.  
Phone Waterlooville 51577 & 51578  
Cable: Lambdatron, Portsmouth

#### GERMANY

Veeco GmbH, 8 Munich/45, Knorrstrasse 142  
W. Germany, Phone 311-77-60  
Cable: Veecovac, Munich

#### FRANCE

Veeco SA, 64 a 70 rue des Chantiers,  
78 Versailles, France  
Tel. 951 03-34 or 951 11-36

#### ISRAEL

Rapac Electronics Ltd. 51, Hayarkon St.  
Bnei-Brak, Post Office Box 18053, Tel-Aviv, Israel  
Telephone 722171 Cable: Rapac Telaviv



# LAMBDA ELECTRONICS CORP.

A  SUBSIDIARY

515 BROAD HOLLOW ROAD, MELVILLE, L.I., NEW YORK 11746 TEL. 516-694-4200, TWX: 510-224-6484 CABLE: VEECOVAC PLAINVIEW NY